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ABSTRACT

Exploring a significant segment of rural education research and field experience in the developing nations, the communication of relevant knowledge to disadvantaged rural populations was examined in terms of: situational-structural variables (factors of physical location, environmental or ecosystem relationships, and community structures); client systems and behavioral change; and organization of curriculum and instruction. Findings indicated that: educational/training activities developed closely in relation to and interacted with a community's ecological and social-structural environments; decisions on knowledge dissemination were usually strongly influenced by groups which carried social and/or political weight, though clients were also influenced by their immediate social environments and preferences; clients tended to learn most effectively when they were in a position to engage in some decision-situation activity related to their sociocultural needs and/or to develop problem solving behaviors; curricular and instructional development was most successful when it included methods for collecting data on clients' actual and potential utilization of knowledge, their social-psychology, and the instructional theories appropriate to a given rural setting; integrated educational development was not feasible in most countries where the urgent needs for agricultural productivity were paramount, though integration as a natural by-product was sometimes operative. (JC)

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PROBLEMS IN PLANNING RURAL EDUCATION FOR AGRICULTURAL AND NUTRITION DEVELOPMENT: A REVIEW OF RELEVANT FINDINGS FROM COMMUNICATIONS RESEARCH

W. K. Medlin

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I. INTRODUCTION

One obvious result of development policies and planning(or their absence) in the non-industrial nations over the past 15 to 20 years, is continued hunger and malnutrition among large segments of their populations. What part the dissemination of knowledge actually played in this result remains yet to be adequately explained and a search for educational change undertaken.

This paper assumes no disagreement exists among readers on the principle underlying the search for better, more effective rural education: that delivery of knowledge enables people to apply it to improving their environments and rendering them more wholesome.(1) Assigning this principle a proper role in the policies and programmes of education in real social and political contexts encounters, however, monumental obstacles even in the most affluent societies. Educational policies predicated, for example, on the assumption that manpower requirements for the secondary and tertiary employment sectors should receive priority in the non-industrial countries, have apparently served poorly the knowledge requirements of most rural dwellers experiencing low agricultural yields and deficient nutritional regimens.(2) Numerous surveys of the problems created by the "educated unemployed" in Africa and of alternative educational programmes unquestionably indict the existing educational services in most rural areas as being grossly inefficient and "basically incompatible with the fundamental goals of rural development ...".(3) For most disadvantaged rural peoples in the world, should priority now be placed on raising farm-family productivity and nutritional levels, or on promoting employment-producing rural enterprises? Assuming very scarce financial resources, the threat of famine, and an abundance of human labour, this paper will explore the data relevant to the first alternative. If policy-makers want to expand productivity, what educational strategy founded on reliable evidence could be devised?

A corrective of low correspondence between learning systems outputs and social requirements has been suggested in terms of "adaptation of education to the local situation". (C.A. Anderson, 1974, p.32) This oversimplified imperative provides the general framework for this background paper. Such adaptation poses a two-way communication problem, between the indigenous client systems and the knowledge-brokers operating as agents of both external socio-economic systems and the rural communities. It is in this set of relationships that learning systems are forged for adapting basic knowledge to needs of rural producers and consumers. The processes of educating are thus dependent upon systems of social organization, whose inter-relating "parts" should be designed to facilitate the educative process. The planner must have information on the substantive contexts of those relationships and on techniques for communicating about them.

1. On determining the paper's scope and objectives

Investigations into the modalities and efficacies of the transmission (communication) of knowledge(4) form one proper field of enquiry that should apply to planning rural educational development. According to some of the best observers, these investigations have to do with the circumstances producing meaningful exchanges of information in social settings (informal or formal organizations), that is, the development of "communication networks". (E.M. Rogers, 1972, p.354, and 1973, p.315). Under this general concept, scientific pursuits include educating humans in a very wide range of situations in which knowledge and skills are diffused. Processes of influencing people through communications networks are what is meant here by learning systems.

The concept is, however, considerably more broad and complex than that which has traditionally been ascribed to the educational process believed to occur in formal schools. In the latter, educational theory has essentially been concerned with a unilinear process of knowledge dissemination from approved, institutionalized instruction headed by a mediator (teacher). This view has been substantially challenged by the findings from socio-psychological, organizational and socio-metric research. (Cf. discussions in C.E. Bidwell, R. Dreeben; and for comparative socialization patterns of non-school youth, Erny.

Data on older learning groups' processes of knowledge acquisition are discussed in many different sources, e.g., Rogers, 1972, 1973, 1975; Grunig, 1969, 1973; Brembeck and T. Thompson, 1973, esp. chapter by A. Inkeles; Kidd, 1967; Röling (with Ascroft) 1973, and 1975; E. Staley, 1970; A. Tough, 1971; D. Katz and R. Kahn, 1966; U. Bronfenbrenner, 1966; H. Hyman, 1967). Whether our subjects are children or adults, research is now obliged to adopt a multilinear, systemic approach to studying problems of communicating, educating, learning.* Some of the most informative data related to this approach are coming from students of the communications sciences interested in the variables affecting the rates and quality of innovation dissemination among rural agriculturalists and homemakers. Findings from these studies bear high significance and will be well represented here. Another reason for this emphasis stems from the fact that our literature search and consultations reveal an absence of hard data systematically linked to predictable outcomes from applying this or that educational programme of rural extension (including community development), animation, training centres, mass media, or other outreach efforts.

These investigations have, however, followed a long, circuitous route: from the early thinkers almost exclusively concerned with group and social structures, to psychologically biased focus on personal variables (the individual), to a recent (more?) balanced approach restoring the structural aspects of research and development in communications processes. (Rogers, 1975). Piaget has noted this and emphasized the requirements or criteria for a nomothetic purpose in social enquiry. (Cf. Unesco, 1970, p.8).(5) These observations provide a theoretical basis for stressing the structural (social, organizational) findings in research. An empirical basis for such emphasis seems obvious, but for the record let us cite a 1963 statement by the Uganda Government: "The problems of agricultural education are not primarily educational; they are intimately bound up with ... systems of land tenure, improved land use, finance and marketing, research and development, traditions and tribal customs ..." (Uganda, 1963).

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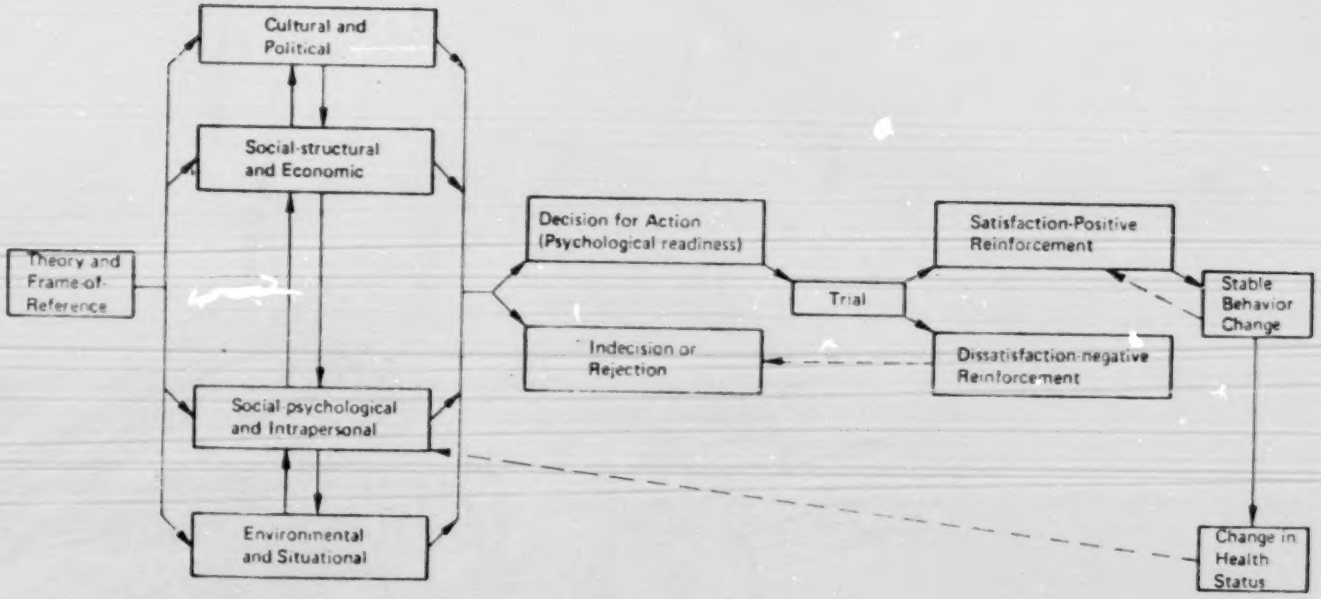
* See Figure 1 for an illustration of this approach.

Figure 1. A model for analysis of determinants of a health behaviour



Source: S.B. Kar, Communication research in family planning, an analytical framework (No. 2), Paris, Unesco, 1975, p.11.

The first imperative addressed by this paper, then, is that educational planning for rural development needs to be informed of the structural conditions under which effective (change producing) communication occurs. This is substantially the same as asking, what social factors are most related to the learner's behaviour change? A number of paradigms have been constructed by researchers around this question, fairly in line with E.M. Rogers' proposition that, "system innovativeness is positively related to, (i) connectedness, and (ii) system openness". (E.M. Rogers, 1975, p.23). While the bulk of evidence will be drawn from literature bearing on this question, information from closely related research areas will be included as space allows. Therefore, materials on organization theory, social structure (concepts of "open" versus "closed" systems), and motivation will find a place in the survey. Finally, inasmuch as situational contexts impinge heavily on these structural aspects, a few selections on methods for their analysis will be included for illustrative purposes.

These findings will be generalizable to a wide range of educational settings where communications networks are the medium of learning.

A second imperative relates to the dominant need among client systems in poor rural areas for the technical means and knowledge for improving agriculture and nutrition. Most rural diets are decidedly protein-poor while developing countries continue to finance importations of substantial amounts of protein-rich grains. (Cf. V. Rao, 1974; I. Palmer, 1972; FAO Fact Sheet, "Population and Food", ESH Series P1, 1973). As the "twin" problems are intimately and continuously related, problems of knowledge production and dissemination useful for promoting productivity and consumption will be reviewed simultaneously; to the extent possible, relationships to structural factors will be included.

Building up a knowledge base in this field for sound decision-making in educational planning has been, and continues to be, conditioned by historical and political factors as well. For example, policies on nutrition in East Africa focussed exclusively up to World War II on programmes beneficial to the energy potential of workers assigned to

industrial and commercial enterprises. Only in 1953 in Tanganyika was a "Central Advisory Committee on Nutrition" set up, which in 1959 was in a position to issue directives on food shortage problems, "enrichment of maize flours, school and work diets, milk supplies, employment of female labour ..., and the nutrition of urban dwellers". (Wasawo, 1973, p.16. On more general aspects of the problem, see D. Jelliffe, 1968, and H.D. Stein, 1965. For a not optimistic view of prospects, see M. McLean and M. Hopkins, "Problems of world food and agriculture", Futures, vol. 6, no. 4, Aug. 1974, pp.309-318).

Improved knowledge of nutritional deficiencies will obviously have implications for food producers as well as consumers, and for ranking priorities between domestic supply and commercialization of agricultural produce. (Cf. W. Schujter and E.W. Coward; and R. Mueller and K. Zevering). There are other issues, such as intensive vs. extensive agricultural development, large-scale vs. small-scale enterprises, etc. which raise questions of how to approach the productivity problem.

In the long-term, the knowledge problem facing agricultural productivity in relation to rural development, compared to deficiencies in nutritional education, is the more critical one. (A.T. Mosher, 1966; A.H. Bunting, 1970; M. Yudelman, 1971; J.P. Gittinger, 1965; C. Jacobsen,1973; R. Dumont, 1965; L. Malassis, 1975; and others). At the same time, nutrition can affect productivity and pose problems for other sectors.

For proper educational analysis, much depends on whether one's approach includes variables determining the choice of educational strategies, or depends on less sophisticated methods seeking explanations based on economic risk-taking attitudes and investment preferences (cf. discussion of this latter approach in M. Yudelman, op. cit., pp.39-45). We do not take this second viewpoint as adequate, in the light of the accumulated evidence on factors determining behaviour change among rural dwellers and influencing adaptiveness of different techniques of work and/or economic organization.(6)

Finally, the presentation is influenced by a choice of the kinds of clientele in search of knowledge, skills, understandings for improving the "productivity, availability, and quality of foodstuffs" -- the priority concern in most rural areas (Wasawo, 1973, p.37). Some research into large-scale technical assistance programmes, notably the worldwide "Green Revolution", indicates some progress in productivity, but at a social cost to small producers and landless labourers. (Cf. studies by A. Pearse; K. Griffin; V. Rao, 1974; I. Palmer; W. McCourtie; P. Mueller and K. Zevering; W. Robinson).

The principal focus in this review, therefore, rests on findings relevant to agricultural and nutritional behaviour change among rural folk engaged in essentially labour-intensive activities. Projects which aim at increases in population density for promoting efficiency and availability of welfare services, regardless of forms of social organization, will be of interest too.

But, "Why not the rural school?" Cannot the formal education system communicate the basic knowledge required for agricultural and nutritional development? A frequent question by those intent on capitalizing on already committed investments in education, it encounters a number of obstacles that have yet received inadequate analytical attention for definitive answers, but briefly, the outstanding obstacles might be summarized as follows:

(1) Policy bias: The assumptions and/or convictions held by many policy-makers, that primary education in rural areas should be modelled on urban education systems derived essentially from urban-industrial cultures, bias the organization, content, methods and personnel against the values of rural populations suffering from low agricultural productivity and malnutrition; and they provide the wrong national image of education. (Cf. M. Brimer and L. Pauli, 1971; E.M. Rogers, 1972; J. Hanson and C. Brembeck, esp. the article by P. Foster; S. Weeks ; and many others.)

(2) Inefficiency: The gross inefficiencies and wastages of primary schools provide convincing evidence of their inabilities to manage change as presently constituted, and so provide no basis for assuming that a change in learning objectives will render them more efficient on that

account. (Cf. studies by M. Brimer, R.I. Brown, J. Cameron, A. Cruiziat, I. Deblé, India Institute of Applied Manpower Research, J. Proust, Lê Thanh Khoi, U. Thein Wan, M. Zamba, and others:)

(3) Ineffectiveness: The design of formal schooling is such that learners are conditioned to become primarily consumers of culture rather than producers. This leads to their becoming actual or potential economic liabilities on society as a whole; there is no evidence that formal schools in rural areas can generate production-oriented programmes whose influence will alter agricultural productivity, or promote healthy nutritional practices, even when a vocational model is employed.(7)

(4) Structural conflict: Both within and without the formal school, there are deep-rooted differences and social-psychological dispositions that are at odds with the purposes, values, and expectations of educational authorities; until the managers are in a position to resolve some of these basic conflicts, little hope can be held for schools' capacities to instrument rural cultural change. (The literature on this subject is substantial -- see references already cited on p. 2-3; an excellent case study on the problem is J. M. Seymour.)

There are other problems, such as linguistic, financial, administrative, and logistic obstacles, and the issues of length of transfer-time (compared to adult learners) to be resolved before what is called the "rural school" can enter the framework of national planning and policy-making. Even the revolutionary measures taken by a few countries, for example since 1966 in Guinea, to broaden the social and functional base of primary education, have thus far met with only limited success (cf. X. Leunda, 1972). Still, we have no "truly evaluative" reporting on such large-scale efforts, including experiments like Cuba's massive rural education programme.

Even looking to historical experiences of countries which have gone through the agricultural revolution of the industrial age does not seem to yield much hope for basic education in schools resolving problems of rural development, either. First of all, the spread of primary schools did not precede industrial development but appears to have grown at about the same

pace as industry and data documenting transfer of knowledge knowledge acquired in rural schools to agricultural work are next to non-existent (in the U.S.A., technical knowledge applicable to farming was learned by school youth in out-of-school activities). Secondly, none of the main industrialized countries had a deliberate, universal policy of "ruralizing" the basic school systems for the benefit of agriculturalists, as some now advocate for the rural areas. Perhaps the "filtering down" approach, or extension methods adjusted to local situations, could ensure the proper dissemination of useful technical know-how in adequately staffed rural areas. But even here, one finds tremendous divergencies among countries in respect to technical and teaching personnel in rural areas. Some of these issues will reappear in the other sections of this report.

One can draw the conclusion that, until further evidence is in, don't look to the rural school - yet.

2. Method for reviewing findings

The preceding discussion provides a justifiable retreat from a holistic model on rural development at this stage of our knowledge, and support for selecting a main segment of the communications field: problems of innovation diffusion among non-school rural dwellers. This change process will be related to findings from three system areas: (i) structural-situational variables: (ii) clients (mainly small farmers) whose need for knowledge is manifest; and (iii) instructional organization and methods designed to deliver knowledge.

Findings will be reported in the above order, with cross-referencing when necessary. Our review of literature turned up extremely little data on the economics and employment problems encountered in planning rural cultural change; but a few relevant items will be mentioned. Hopefully, the reader will see some utility in this exercise in face of the challenging question: "How do learning systems relate to the adoption by rural dwellers of changes in practices of producing and consuming food?" The processes we are exploring are common to all learning systems: recognition, assimilation, and application (testing-out) of knowledge, skills and understandings that are useful to people. Hence, the expected generalizability of the data to be presented.

II. STRUCTURAL-SITUATIONAL VARIABLES

Main consideration here is given to the factors of physical location, environmental or ecosystem relationships, and community structures. Each bears upon how a population functions culturally, and together they constitute the main core of regional and local planning, which realistically is not done "by disaggregating national output or input targets regionally". (Cf. U.N. Department of Economic and Social Affairs, 1974; and also, A. Waterston, 1974) Rural educational planners in developing countries report that a paucity of information exists on these factors, and little knowledge yet on how they affect learning processes.

There are a number of methods for producing data on them, however, and some findings relevant to their impact on learning. These latter may tell how a culture is linked "primarily to the consumption needs of local people, and to local values and beliefs", or to a broader set of interests (A. Bunting, 1970, p.69); or how differences in institutional arrangements (say land tenure), or in natural environment (water supply), or international trade (mono-culture for export), can affect the kinds and amount of knowledge utilized in economic efforts; or how community power distribution regulates the flow of knowledge among constituents, whose perceptions of what is important information may then diverge from expected effects; etc. The significance of each kind of factor for the tasks of building adequate learning systems responsive to rural folks' needs, will hopefully be illustrated in what follows.

(1) "Regional science" in the Christaller tradition provides methods for defining the numbers and kinds of functions (work, services) performed at different population points in a region. Some planners employ the "service centre" technique for plotting inter-community links, outreach effects, technical level, and development potential of a region. Centres can be ranked comparatively and interdependently. Plans should then become more predictive, since "it is clear ... that service centres where some growth impulses are found are the ideal locations for developmental investment". (Misra, 1972, p. 49; cf. also similar methods in: Centre national d'Etudes économiques et juridiques, 1974; C. Heimpel et al., 1973) Consequently, educational investments in client systems could be planned accordingly.

While structural analysis of this kind is highly advisable, it does not cover other factors influencing human uses of the environment: social conditions and vital human concerns. Methods for eliciting data on these matters include identifying rural dwellers' sense of "home community", or central-place "catchment" areas (Di Tella, 1972); participant-observer surveys, especially among non-literate populations (F.T. Sai, 1972); and the questionnaire, depending on the access variable.

A comprehensive survey embracing most of the above methods, and including an educational development component, was carried out in Thailand (Janleklia, 1968). This led to designing a learning system for specific community groups. The Community Development Department analysed the ecological factors determining economic and social activities in the Tambon of Saraphi: the work tasks villagers engaged in, social organization and demographic structure, nutritional habits, health conditions, community problems, and what kinds of technical assistance might be useful. This assessment showed the need for soil enrichment, water management, better farming practices, more labour supply (but without natality increase), and infrastructure improvements. Popular involvement in the information-giving phase was provided through participatory representation in a committee structure having direct links to the community development agents in the region. A series of projects having community backing was launched, one of the earliest and most important being farmer training for raising agricultural productivity in six villages. A co-operative was formed to strengthen the local social systems serving farmer needs. In all projects, the method of non-directive communication between officials and residents was employed, going through indigenous organizations for dissemination, discussion, and feedback. (Note: such comprehensive approaches are costly.) (Similar approaches can be documented in L. Virone; and an early "prototype", applied in the Middle East, in H.B. Allen).

(2) Recalling Anderson's beck for knowledge systems directly related to local conditions, we should apply at least one initial test to that precept: how does ecology impinge on adaptation? An intensive anthropological study (Geertz, 1968) on Indonesia's "inner" and "outer"

zones over three centuries shows how ecological factors accounted in large measure for two different types of social system, one of which became extremely resistant to cultural change.

The inner zone farmers practised a burning-off of old crops prior to replanting, as a nutrient-enrichment measure. Social patterns, religious ritual, and eating habits subserved this practice and controlled the amount of food produced and consumed -- and thereby directly influenced population growth, which accelerated toward the famine point. Introducing new knowledge on fertilizers would have required altering a whole life style, which was too disturbing to contemplate. In the outer zone, land utilization factors were different, permitting an alternative to the burning practice, but still close links with inherited socio-cultural practices were evident and consistent. These two ecosystems evolved within the same nation and led to very different population distributions, but in spite of pressures and needs neither acquired adaptability to new knowledge. Nor did political control by an external power bring noticeable agricultural change.

Geertz compares this rural development to that of Japan, facing quite similar ecological conditions, which exercised a definite choice for agricultural change: either re-educate the peasants, or increase the labour supply. Rural decision-makers became aware of the need to raise the technical inputs into farming and thus the output per labour unit. Indonesia did not exercise this choice. The rural educational policy employed in Japan nourished productivity among a peasantry motivated to supply new markets. All these factors supporting change brought about a 236 per cent rise, during 1872-1919, in the productivity per farm worker. In Java over the same time period, the peasant's productivity failed to change at all, while the pressures on available land constantly grew.

Still today, community education policy in Indonesia seems inept at attacking the real issues: "With hunger and malnutrition so widespread in Java ... calorie output should have top priority ... . But in the light of the very generous credits to Indonesia in the last six years (1966-1971) and the active interest of foreign companies and governments ... there seems to have been unwarranted haste in committing the Javanese people to new world records of protein deficiency. Had the Indonesian

Government been made more fully aware of the appalling nutritional status of the Javanese people they might have bargained harder for the welfare of over 60 million people. A more sober look at all the implications of the 'rice revolution' might have pressed home wider issues of nutritional standards." (I. Palmer, 1972, p.62) Such an observation points to an inescapable question: what priority objectives do educational policy, planning, and programming aim to meet?(8)

Some rural development specialists are pointing consistently to the problems of the smallholder, the "forgotten farmers" who form the bulk of agricultural workers. Aside from obvious humanitarian aspects of their plight, the economic development of agrarian-based societies cannot move forward without significant increases in average farmer output. The motivational force behind a drive for increased production may be related to access to land ownership or land management, farm-product distribution, and means for influencing decision-making processes in agriuclture, including policies on technical assistance, or a combination of these. As in the Japanese and other cases which have been documented, intervention into the social, extra-personal systems appears essential for bringing about more dynamic and productive rural social organization. This point leads to consideration of structure.

(3) Structural changes, most often managed from above, consist of attempts to foster new social organization more adapted to modern farming methods. These in turn always entail new learning activities by those participating in the change. Resettlement projects, such as those now carried out in Tanzania, are excellent examples of these structural interventions, whether to increase the population density in arable areas that remain underdeveloped, or to provide economic and social opportunities to disadvantaged populations, or both. In either case the costs of the structured changes must be covered by increased productivity to amortize debts and assume responsibility for current costs. A Pakistan resettlement project, with long experience, can serve as an example of such cultural change.

The "Khanewal Project" (1948) set out to provide 10,000 settlers and their families (some of whom had not farmed) with an average of about 5 - 6 hectares of land per family head, and an organizational infrastructure (co-operatives) to support them and ensure continuity. (P.F. Philipp, 1972)

The settler rented the land from the co-op., which was centrally controlled and on whose governing board the farmer had in fact no voice. These constraints were coupled with others, such as lack of adult education for co-op members, unequal services, official corruption -- all of which threatened the project with catastrophe. Reforms from central authority, in response to local complaints, provided for settler representation through their election of a majority of board members, for farmer purchase of land from the co-op, for public accounting of co-op books, and for basic education for families -- children and adults. Other measures evolved, such as collective marketing of commercial crops and capital formation to finance farm services (irrigation, transportation, mechanization, etc.). The three apparently most significant motivational factors behind the project's radically changed development after the reforms were: participation in management, ownership of land and its fruits, and educational opportunity to acquire newly needed technical qualifications. By the mid-1960's, out of 132 local farm managers, over 80 were offspring of project-farmer families and had received some basic education plus on-the-job training and in some cases, special courses for farm managers. (Other aspects of organizational intervention are reviewed in O. Esquivel, in Unesco, 1966; J. Cravioto; Wasawo; and R.W. Miller).

The Khanewal experience points to the kinds of structural reforms which will, in all likelihood, provide the dynamic openings for communications programmes of various kinds to stimulate, then multiply many-fold, the cultural transformations which alone can bring about the productivity revolution required. The relatively modest record of communications efforts in this respect has led to new investigations into the system prerequisites for knowledge innovation. (Grunig, 1973; Rogers, 1975; Röling, 1975) The ways in which client systems "are bound in by restrictive system structures which they, as individuals, are powerless to change", must first be shifted to permit two-way communications between knowledge sources and knowledge users. Unless the users can exercise a meaningful choice and some control over its consequences, these research findings show, there is no point in investing in learning systems of any kind. M. Brown (1970) showed that in a completely unstructured technical assistance programme (except for the advance preparation of a brochure),

Chilean peasants sorted out the kinds of knowledge they needed and experienced significant improvements in their agricultural skills -- regardless of their educational level -- in fact, illiterate peasants registered the same rate of gains as did educated ones. This finding shows that what Grunig (1969, 1971, 1973) calls the "decision situation" occupied by the receiver of the communication (or educational intervention), influences the client's adoptive behaviour. He proposes a model (similar to others being advanced by communications specialists) for eliciting and classifying decision situations within a structured network of communications. The key concept behind the decision situation is problem-solving behaviour, which can be linked to knowledge acquisition, with behaviour being ranked from high to low levels of information seeking.

By this kind of model the relationships between roles occupied in the social system in which clients and information-givers participate, and their communications behaviours, can be analyzed and alternatives in policies on knowledge dissemination can be clarified. Determining specific instructional strategies will depend, however, on not only structural but other factors as well.

The strength of these findings from researching the influence of structural factors on the learning situation is such that one is driven to the conclusion that, at this stage of "development theory" we need to make some very hard decisions about what next to invest in to advance rural change. We probably do not need any more elaborate, quantitative work on the unemployed, their educational deficiencies, the percentage of adopters among those exposed to innovations, on aspirations of school-leavers or drop-outs. According to some, there is no point in training youth or adults for small-scale cottage or village-based industry because of cost factors. (V. Dandekar) Nor do we need, according to others, research on "the relationship of mass media development to national development, ... modernizing attitudes, ... achievement motivation, ... non-traditional individuals", etc. Rather how to alter rural dwellers' knowledge of farming is the main issue. According to E.M. Rogers, emphasis on promoting changes in structure as against changes in the person should occupy planners' attention most. This educational viewpoint

finds firm support in other sectors of social research.(9) Further discussion of this question leads us naturally into a consideration of client systems and their knowledge needs.

III. CLIENT SYSTEMS AND CULTURAL CHANGE

Planners face a wide range of actual and potential learners in rural communities among whom choices for educational investments must be made from scarce resources. While the disadvantaged small farmer may be the most difficult to reach, our preceding analysis pointed to the urgency of his needs and to those structural factors which could be employed to position that social stratum for possible educational interventions. The Chilean experience referred to is very instructive in this regard.

Human organizations which can engage in new learning programmes are found at different levels of environment development, performance tasks, etc. as defined by their goals, social change orientation, and resources. (Cf. A. Meister, 1972, esp. chaps. V - VIII) Each operates a communications network for processing information and getting work done, and it is through such functional subsystems that change strategies can operate. Research has found that African tribal associations, initially formed to take care of basic welfare tasks of members, gradually contracted other obligations, such as credit and schools, directly related to new-felt aspirations for social and economic development. (J. Coleman, 1952; P.C. Lloyd, 1953) Traditional local associations in Latin America (juntas) have expanded their functions at community levels into major social projects, and have been a source of civic and organizational education to their members. (T.F. Carroll, 1969) People's associations are manifestly anchor-points to which the smallholder and his family can relate, and part of the educational planning tasks would appear to be to identify these social organizations and their potential as support systems for new knowledge dissemination.

Success in dissemination will also depend in part on the nature and influence of the communication networks established between indigenous systems and the knowledge-dispensing system. Findings indicate that, in projects intending to stimulate "self-help" among disadvantaged communities, building two-way communications channels is essential to establishing a co-operative arrangement, on the "receiver" side, capable of implementing

induced knowledge. (R.L. Bee; and R.W. Miller, et al.) In fact, these social projects indicate that the receiver must perceive of himself (or his social group) as being the real "change agent".

The cultural influence of the social group or system in which the individual client functions has been documented particularly well. The nurturant conditions of family and home, which persist in influencing learning processes within a formal school setting, as well as the "non-instructional" influences of peer groups and other natural or contrived social settings in schooling, are well known. (Cf. R. Dreeben, 1968) An analysis of behaviour change among 500 Indian village farmers showed that community factors such as organizational assistance from peers and networks of communication correlated higher than did individual variables (land size, education) with indices of adoption of new techniques. (Sandhu and Allen) Another Indian investigation documented serious message distortion in communications coming from outside change agents, especially at the initial point of dissemination from the agent to the local receiver-learner, apparently due to discrepancies by the latter in perceiving the roles of outsiders. (F. Fliegel et al.)(10)

In more socially structured settings the importance of organizational influence, and the channels for exercising it, have also been found to be as critical as awareness or "need" of innovation on the part of clients. In two co-operatively organized farm settlements, there were important differences in the way clients perceived new knowledge, depending upon their group cohesion and level of economic organization. (M. Cernea et al.) A social experiment in an industrial setting showed that workers' proneness to change (learning aptitude) depended on social organization at the work site, and its incorporation of the goals of both technical progress and economic incentives (Z.I. Fainburg).

In a longitudinal, post-hoc investigation of social change policies applied by central planning agencies to a traditional culture in Central Asia, significant gains in the adoption of new technologies and ideologies through learning systems dependent on externally induced organizational structures, were realised especially in cultural domains bearing continuity with social values from certain marginal groups. (W. Medlin, et al., 1971)

Intervening organizational forms such as reading circles, women's clubs, youth clubs, ethnic studies, and teacher-training programmes carried significant, change-producing influences on "backward" elements of society to the extent that they were linked to aspirations and/or survival needs in the indigenous populations, whether rural or urban. Another factor that seemingly accounted for some measure of innovation acceptance was the representation, at levels of organizational leadership, of persons identifiable as significant or trusted spokesmen for the recipient client systems, who could perform effective two-way communications functions.

These various findings and viewpoints on what appear to be predominant sources of influence, lodged in the social organizations of client systems with their communications networks, are rather well illustrated in field experiments that have been carried out in recent years among needy farmers in Kenya. These experiments have departed from most previous studies on innovation adoption by rural dwellers, which have typically been concerned with the processes whereby progressive-minded farmers are led to more productive and wholesome agricultural practices.* This field of activity focusses sharply on the "forgotten farmers" with a view to penetrating their social systems with the knowledge needed locally to expand the use of effective, yield-raising, protein-rich agriculture. (J. Ascroft, N. Röling, J. Karinki, F. Chege; and N. Röling, 1974) Rural education plans in the past had resulted, quite inadvertently, in very uneven adoption patterns among farmers (sharply dividing "progressives" and "laggards"), and in inequities in agricultural incomes. The project aimed to correct these trends, if possible, and to multiply the benefits of extension services across as wide a social field as possible.

Details on the plan implementation to bring about hybrid corn cultivation cannot be reviewed here, but an important organizational aspect of it, in relation to client acceptance of agricultural change, was the administrative arrangements and recruitment methods. The planning and organizing of the project were initiated and carried out at district and local levels, not by virtue of central decrees on agricultural management within the Government's national rural development programme (although the latter in fact provided the political justification for the new project).

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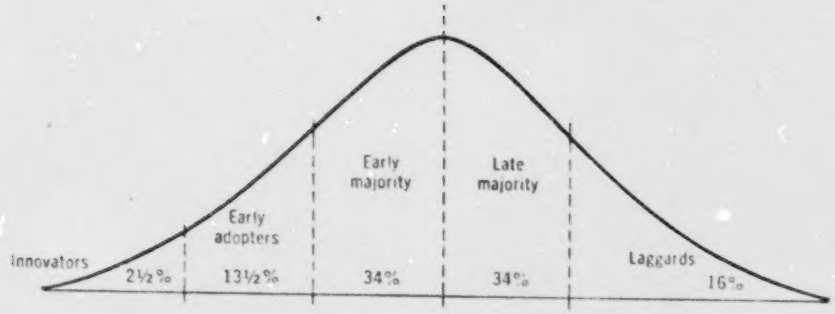
* See chart on next page for illustration of "normal" rates and distributions of innovation (knowledge use) among rural population.

Classical paradigm on knowledge adoption



The paradigm is essentially based on research findings from projects on innovation, wherein the amount of structured intervention and manipulation of variables was minimal. New data suggest the need to revise the paradigm

Source: E.M. Rogers, 1969, p.295.

Extensive contacts and meetings were held by local officials and educators who knew local farm conditions. Secondly, selection of farmer participants in the educational programme was done on the basis of good information on farmers' agricultural practices, and on the basis of personal knowledge by local agents about the farmers in general. Finally, the project staff provided a number of small material incentives - free tuition, transportation, and agricultural supplies - in return for the co-operation by farmers with the innovative project.(11) These measures proved to be valuable supporting factors of the newly contrived learning organization.

At farmer training centres (FTC) short, week-long programmes conducted by specially trained extension agents assisted by local aides were administered to "non-progressive" farmer representatives of small groups in their home areas; a few farmers (5 per cent), already known as progressively minded, were included as participants. During the training exercises, pedagogical use was made of the precepts that some learners easily adopt behaviours from others during group activities, and that through participating, learners are stimulated to acquire new knowledge. When the newly trained farmers returned to their villages, their examples as well as meetings with peers would be expected to bear strong influences.

The results of this training project bore out the expectations, in that much larger numbers of "forgotten farmers" (95 per cent) adopted new techniques as compared to those who adopted from earlier extension programmes. The changed attitudes and practices did not stop with the proffered innovation, however, but extended into other areas such as seeking financial credits and the responsibility for repayment, and encouraging neighbours to adopt. For every farmer trained at the centre, 3.7 others followed suit. Thus, this organizational development at local level "paid off": trained farmers increased their yields, and became centres of interest in their community and "teachers" of others; non-trained adopters made sacrifices out of their own resources to invest in new techniques without having recourse to outside credit; and the overall multiplier effect brought in other benefits not foreseen by the original participants in the project. A cost-benefit analysis of the project proved its financial feasibility. The experiences here showed that what is

called traditionalism need not be a "bottleneck to development", nor are "the attitudes of the forgotten farmer ... an insuperable barrier to their development". Project managers caution, however, that such optimism may be unwarranted where serious structural impediments are put in the way of disadvantaged farmers' progress. As we noted above, the planner needs to examine the scene to detect such obstacles before recommending change.

Another experiment in building ad hoc learning systems in the field was organized on a quite different basis. (Unesco, 1973) Under the leadership of an outside agency contracted by the national Government, three multi-functional teams of change agents formed to tackle problems of raising agricultural yields in Thailand's Khon Kaen region, in connection with an educational programme of functional literacy having both general and technical objectives. Composed of specialists from a number of countries, the teams first set their objectives in line with national development plans, and then conducted on-the-spot surveys at village level to gather base-line data on environmental and social conditions. A second phase focussed on drawing up and administering a brief (3-day) educational programme for the "needs of the particular target groups" (about 20-30 families each). The programme embraced knowledge on irrigation, cultivation, pest control, fertilizers, co-operatives and credit. Knowledge dissemination on these subjects was organized along both direct (demonstration, teacher delivery) methods and non-direct (discussion, problem-solving, role-playing) methods of instruction. Reading and writing skills were incorporated within information units. Finally, each team conducted a pre- and post-test to determine both the factual knowledge acquired and level of basic skills attained by its group. Gains in the first category proved more significant and consistent than in the second. Although the project did not conduct a later follow-up on the extent of adoptions that farmers made in practice, its organizational aspects demonstrate the feasibility of building ad hoc learning systems having real value for agriculturalists. The personnel costs of this type of approach, however, would prove to be high.(12)

Final mention should be made of an experiment interesting for its educational management of rural client systems, but most of whom were not trained for agriculture. (Van Rensburg, 1974) In the region of Serowe, Botswana, school leaders built up a dual system of secondary general and vocational education based on strong community-school relationships. The latter enabled them to include the two systems within the one-school concept, though not without problems. Social value and rewards in both programmes were perceived by participants and so justified investments in the formal organization of vocational training, which later paid for itself through selling community services. Perhaps the main interest for this paper is that a comprehensive-type educational system for rural dwellers seems feasible when the community can clearly identify with its objectives and expect returns.

The organizational treatments for client systems reviewed here have, in most respects, closest kinship with societies or communities where associationist practices are highly visible and rewarded, as in market activities or participatory political movements. They tend to be less endemic to societies stressing high affiliation to external acculturating programmes, in which cultural identity with a collectivity ranks higher (in leadership circles) than does identification with self-interest or competitive systems. (For a discussion of such polar tendencies in organizational behaviour, see A. Meister, 1970/71, and 1972)

IV. ORGANIZATION OF CURRICULUM AND INSTRUCTION

Providing a bridge between clients, with their organizational characteristics, and the setting where knowledge is communicated from an outside source, is the task of both the planner-organizer and the planner-pedagogue. Several cases of this connection are described in Section III. But to introduce a review of some materials bearing on curricular and instructional organization, an observation made back in 1966 by a student of East African rural development is offered to drive home this point:

"The evolving system of farming ... has already outdistanced existing service institutions in rural areas. Neither farmers nor their advisers are equipped to make the managerial decisions required. If a farmer has invested several thousand shillings in exotic cattle or perennial crops, he must know the danger signs of important plant and animal diseases. He must know something about emergency treatment measures. If he is to get maximum crop yields, he must understand the critical effects of planting and weeding times, the dangers and benefits of intercropping, and recommended plant populations. If he is to protect his crops, he needs procedural knowledge about agricultural chemicals. If he is short of labour, he needs an awareness of simple devices - pulleys, wheelbarrows, etc. - which lie within his savings capability. If he chooses between new investments, he must know how to calculate enterprise costs, how to estimate labour requirements, how to evaluate market risks, and how to determine his farm's plant and animal nutrient status. If he is to expand, he needs to know complicated procedures for getting government assistance of various kinds: farm planning, getting loans, etc. The list easily grows into an imposing array of personal skills - skills which far exceed the capacity of the poorly trained staff of rural primary schools, extension offices, and training institutions."

"Agricultural training 'pays off' only when the organizational links are established to make use of it. Thus organization requires its own capital, in the form of high level staff, attention by planners and executives, and communications facilities. Economies can be achieved in traditional 'line organizations' by minimizing the resources devoted to organization. The department continues to function as long as downward supervision is maintained. In training, however, the failure to create organizational ties between the programme and the larger society quickly destroys the special advantages of training. There must be a balance kept between the means allocated to creating physical capital and those given to organization. It is false economy indeed to sacrifice the essentials of programme organization in order to press ahead in the building of even more schools, colleges, and institutes."

(J. Moris, 1967, pp. 329 and 362. An historical account of the change requirements for transforming agricultural systems is in H. Mendras, 1971.)

The list of agricultural knowledge and skills he recommends forms a healthy agenda of curriculum objectives for planning the training of young and adult farmers, who are engaged in the kinds of organizational settings we have illustrated here, and whose indigenous culture does not provide the needed knowledge. Then, for the communications bridge to carry such curricula, one should ask: what kinds of training programmes for trainers (change agents) in agricultural and nutritional education can equip people

adequately for their tasks? Findings in these two areas are less definitive than one would like, but those which seem to respond best to the situations rural clients are in can be very useful.

Our best examples of trying to match the "cultural equipment" needed by rural producers with knowledge-delivery systems come from non-conventional (non-formal) learning arrangements. First, let us examine some information packages, alias curricula or knowledge systems, that have formed the main body of the messages, alias instruction, transmitted to small-farmer client systems; these are cases marked by reasonable success in changing client behaviour. We will then give brief consideration to some conceptual aspects of rural education advanced by experienced thinkers and ministerial agencies committed to rural educational development. Finally, instructional strategies that have apparently been effective in the field will receive a brief hearing.

Curriculum. Findings on how mass media relate to knowledge objectives can help clarify the question of what formal institutions' policies are with respect to information selection for rural clients. A number of dissemination studies have pointed out that communication, as an educational activity, does not itself bring about development but that its content is what can make a difference, in correlation with other factors. In Marshall MacLuhan's words "the message is the massage" while the idea it communicates in fact operates. In a rather intensive analysis of the communication variable in mass media, Fett (1972, 1974) discovered that (i) knowledge analysis was the most neglected feature of research communications development in the non-industrial countries; and (ii) only about 9 per cent of the messages on rural affairs, published by 54 newspapers with a circulation of 235,000 could be rated as high on farm-related knowledge. Situational relevance is almost totally absent. This finding reflects extremely low inputs into the media programming processes with regard to agricultural improvement. Such media perform poorly as educational agents in rural areas, notwithstanding the fact that practically all farmers have access to the media.(13)

In highly structured dissemination programmes, such as the agricultural training courses organized for Tetu farmers (in the Kenya project previously referred to), circumstances can be quite different, but also exceptional in terms of situational relevance when compared to

most conventional educational delivery systems. The basic aim of the educational programme was to promote "adoption of income-generating agricultural innovations" by farmers whose behaviour was known to have been "non-progressive" in the past. The knowledge to be communicated was compiled by the project team through three inter-related processes for building a curriculum:

(1) Review of ecological factors connected with introducing high-protein corn seed and agricultural techniques essential to its successful development.

(2) Classification of curriculum into different units, in line with the "needs and abilities of farmers", who were grouped into four "categories of agricultural advancement or progressiveness". The report specifies: "Curricula for laggards would stress basic and simple skills and practices, more complicated material for subsequent categories, and farm planning and farm management for the most progressive, who thus obtained their 'school-leaving certificate'."(Ascroft and Röling, 1973, pp.38-39) Each applicant-participant underwent scheduled questioning by an interviewer to find out details about his farm holdings, crops, practices, sources of information, organizational activities, etc.

(3) Conferences of specialists (regional officials, educators), presided over by the top provincial agricultural training official, in order to review programme recommendations and lend to the proposal official visibility and support as well as to make alterations in the curricula.

This procedure more or less assured substantial situational relevance to the communications content. The next problem was how the knowledge would be in fact delivered to the client systems. The solution reached can best be presented here in the form of the main components:

Components of Educational Delivery System

Curricula : 4 Levels (Knowledge systems)	Instruction : 4 Levels (Message systems)
. Applied maths (market economics, cost accounting)	. Visual aids, incl. wall charts (trainees fill in progress charts)
. Fertilizers	. Instructors' impartation:
. Cultivation	classroom: teacher/mediator-motivator*
. Crop protection	extra-classroom: field asst./adviser-helper
. Harvesting	. Trainees participation in exercises
. Storage	. Demonstrations, exhibits (in addition to other visual aids)
Basic sources included Min. of Agriculture manuals on new crop requirements	. Final test on course objectives to determine understanding

*Teachers received in-service training in motivation, adult social-psych., special communication skills, handling special problems, etc.

Curriculum-instruction linkages

The curriculum, broken down both into discreet subject-matters having their own integrity, and into levels of technical difficulty, was passed along a considerable number of different message systems in terms of trainees' learning styles and of suitability of treatment. For example, certain operations in handling seed or fertilizer could be performed by trainees in classroom exercises, and later applications or extension of the operations were done with the assistance, in the field, of junior agricultural agents who could on-the-spot reinforce the lesson imparted during the training session. This combination of theoretical and clinical instruction is probably the best known approach to training in vocational skills, and the project demonstrated that it is feasible for simple farmers living in highly traditional cultural settings.

The third and final leg in this communications process is made up of the linkages between programme of curriculum and instruction, and the clients' social organization (including work relationships). These linkages were of several kinds:

(1) Between the farmers-trainees and local agricultural technicians who perceived them as disposed to co-operate in a beneficial project on innovation, even though the farmers were not known as adopters but were viewed as behaviourly inclined to material incentives.

(2) Between local officials and external experts whose joint collaboration designed a functional knowledge delivery system within farmer comprehension and interest.

(3) Within small semi-formal organizations of farmer trainees which were formed, under the guidance of local assistants, on the conclusion of the training programme, to follow through on what had been assimilated.

(4) Among small informal groups of farmers in the village area whence trainees came, whose interest in agricultural innovations and confidence in the innovator-adopter's judgement encouraged them and others to imitate the new behaviour.

(5) Between a number of religious believers among the trainees and the latter, whose zeal contributed much to building a certain collective, "togetherness" spirit among the trainees -- giving a buoyant, positive orientation to the entire process of training for innovation.

The original reporting on this project did not attempt to document the intensity of, the attitudes of participants toward, or the frequency of the kinds of social linkages described here, but rather to indicate their significance within the total communications network built around agricultural needs. In hindsight, it would seem that linkage patterns in items one, three and four, above, constitute the matrices of genuine "learning cells" within which highly meaningful communications activity connecting knowledge supply -- curriculum -- and the human areas of knowledge utilization occurs. These subsystem networks of the larger learning system are probably the real nuclei of assimilation and reinforcement -- the nerve centres of autodidactic learning. It is in those little circles that the participant becomes aware of change, and of himself as an agent. These observations reinforce E.M. Rogers' concept that, a social relationship between source and receiver is the actual medium of the diffusion of knowledge. (Rogers, 1972, p.354)(14)

In recounting the dynamics of this communications project, we should recall that the participant-trainees were mixed as to educational level: 35 per cent were illiterate, while 65 per cent were judged literate in either Swahili (22 per cent), English (16 per cent), or a vernacular (27 per cent). And that 30 per cent were female trainees. From the results of the experiment, it appears that neither low educational nor female status seriously hindered the functioning of the learning system. Further experimentation, perhaps with higher numbers of participants in both of these categories, merits consideration. Finally, while this project's success may not answer critics who insist (ideally?) on mass-scale functional literacy programmes, it does suggest that building effective learning systems for poor rural families lies somewhere between the mass model and present models of formal education.

Another indicative experiment, based on "action-research" and engaged in building curricular units and instructional deliveries linked closely to client systems, is under way in rural Ecuador (Hoxeng, 1973). While its knowledge-utilization and evaluative phases are thus far little developed, a brief review of this approach at outside intervention shows how a broadly defined concept on relating people's awareness of their potential to "community-based decision and demand systems" can gradually be implemented in a highly structured society. Initially, this society's officialdom at all levels gave their approval that the experiment take place; this action found reinforcement in the fact that a major outside aid agency had already been conducting a social change project in the country for some time.

The project directors (who included some indigenous specialists on the staff) gained the co-operation of many local citizens' organizations in providing clients willing to participate in experimental games designed to familiarize adult rural dwellers with the social and economic realities in their own environments. This familiarization process, composed of "subject-matter themes" (the co-operative, food and nourishment, the market, crime, the church, the law, etc.), led on to the exploration of useful skills and understandings which the campesino valued in his daily struggle for survival and human dignity. Games modelled on such participant-centred amusements as "monopoly" and dice were constructed, using the local culture as content - e.g., Hacienda is one such "local game". Participant-players

assume social roles of banker, lawyer, landlord, peasant, etc. and try their chances at gaining influence over resources and their use. Many other games, requiring the acquisition of basic skills to manipulate them, as well as audio-visual aids (tape-recorders; comic books; image-stamp blocks for picture reading, modelled on the traditional "rubber stamp", etc.) were introduced.

Various institutional services became available to the project, such as broadcasts of "Radio Mensaje" which agreed to publicise and then schedule parts of the innovative programme to 50 villages, and local schools which provided space for meetings and games - being converted thereby into "community schools" of sorts! This support, added to official government sanctioning, ensured the project with more than minimum political legitimacy.

Progress in the campesino's mastering of basic arithmetic and language skills was guaged on a tentative evaluation scheme; results as of 1973 indicated good gains in arithmetic (except decimals), and inconsequential progress in reading, but some in writing.

The Ecuador experiment (still under way) suggests thus far that curriculum, developed with the clients' motivations and values clearly in view, is susceptible of a considerable variety of instructional treatments, irrespective of the probable "culture-bias" borne by non-indigenous technology. This same possibility of cross-cultural applications of technology is supported in a synthetic report on non-formal education (T. Ward and W. Herzog, 1974), empirically based mainly on Brazilian data from an educational experiment on nutrition. Varying the application of instructional theory according to client characteristics, programmed instruction was employed with the following results: programmed instruction is adaptable to adult learners motivated to acquire basic skills; learning in group settings is not equally beneficial to all learners; using discovery methods yields benefits; and application of both group method and discovery method is more productive for "traditional learners" than for "modern learners". The experiment also showed that learners who have attained a basic education have no particular advantages over those who have not, with regard to acquiring and utilizing knowledge about nutrition (there is a negative correlation between school success and nutritional skills).

Formal (conventional) learning systems

In the area of formal programmes of education of children and youth for communicating knowledge useful for rural development, the evidence is both less conclusive and less encouraging. Research reports on two formally organized rural learning systems, among a number, will give us a sample of the field.

In the case of Guinea, the pronouncements in 1966 and thereafter of the "Cultural Revolution" launched the concept of "Revolutionary Education Centres" whose comprehensive curriculum embraced both academic and vocational education. The latter included useful community-service work, such as sanitation and reforestation projects and civic-moral edification. Instructional methods vary and may begin with matters of daily significance to youth, whether urban or rural, industrial or agricultural. In spite of claims to progress in training youth for work, some formidable obstacles await solution, not the least of which is training instructors qualified to conduct the new programmes. Others include an absence of management skills to operate centre farms, excessively sophisticated technical inputs into the curriculum (beyond learners' levels), inadequate incentives for participants, etc. (X. Leunda, 1972).

A somewhat more intensive analysis of the "Centres d'Education Rurale" (CER) in Upper Volta sought to determine the "concrete results" of rural education in pupil knowledge gains, and impacts on agricultural practices (I.C.E.D./I.E.D.E.S.). From the total 737 operating centres, 235 pupils were selected for study from among ten "good" centres, over the period of one month. Principal objectives were to ascertain the levels of basic knowledge acquired in the French language, arithmetic, and agricultural skills. Another possible objective was to find out how the technical competencies gained were applied to environmental tasks in daily life. Finally, the comparative cost of a modified conventional education was of interest.

Results in language development were scored as satisfactory if the youth could function in elementary French; in arithmetic they proved very uneven. Agricultural-skills acquisition were registered as "good". Literacy-teaching methods were adapted from adult pedagogy and are worthy of further experimentation. Per unit of instruction the centre costs one-fifth as much as the regular school programme.

It appears that, while learning objectives are reduced in level and complexity from those of the schools, they remain quite ambitious for most rural settings. Some concepts are much more adaptable to local use than others, and further experimentation is in order. Teachers manuals do not always relate well to the environment or local crops, although practical exercises and some modern methods of teaching can overcome such handicaps. The prospects for making centre production in agriculture cover all operating costs (except staff) are not yet clearly in view. Furthermore, a number of indications point to an undermining of the centre programme: high absenteeism of personnel; uncontrolled truancy by students; physical isolation of some centres from sources of technical assistance; problems of resistance in recruiting students; fraudulent and/or inefficient management; inconsistencies of community support and recognition of benefits; inadequate communication channels between the local centre and central administration; etc.

Some historical-conceptual aspects of programmes

Systematic efforts to bring school curriculum and instruction more into line with socio-economic needs of rural environments date from the latter 19th century (although there are a few exceptions dating from the 17th - 18th centuries in Europe). The idea of a "fundamental education" for Latin America's rural folk is traced to Ignacio Ramirez around 1880, who advocated general edueation, indigenous cultural values, female education, vocational training and religious education as an appropriate knowledge base for rural Mexico. (Cespedez-Bedregal, 1955) The community school concept in the Philippines, strongly supported by foreign assistance, is linked to native attitudes toward the school as a problem-solving institution for the community (V. Bernardino, 1958).

Perhaps the most vigorous, if not most successful, programme on rural education was that which M. Gandhi largely fathered. We refer to a set of Indian concepts on basic education. In approaching the vast problem of basic education - Nai Talim -. and of bringing useful knowledge to the Indian village, Gandhi saw the issue not in terms of basic intellectual exercises leading to minimum standards of general educational attainment, but rather in terms of building up knowledge and skills in young learners derived essentially from the village work tasks and from a sense of

historical and geographic realities. (Gandhi, 1951) Formal primary schooling, on the European model, "was not only wasteful, but harmful" for India, since children developed an alienation from parents, village occupations and their surroundings in favour of "affected urban ways". Through socially useful manual training the right attitudes and some employable skills can be nurtured, inducing in the course of gradual mastery other learning drawn from basic subjects: language, history, geography, mathematics, sciences. The needs for rural craftsmen could be supplied in this way, and by teaching a particular craft or trade in its totality, a basic curriculum of general education could be developed in a much more natural, functional way than could be accomplished through traditional primary education. By means of their productive activities, these schools should become fully self-supporting and promoters of rural co-operation in all domains of life. Gandhi admitted that this conceptualization of basic education would not accommodate the cultural requirements of industrialism. Herein lay, he felt, a major choice that India and similar nations must make concerning their future development.

Until Gandhi's influence was felt through the Congress Party, in 1939, little implementation of his ideas occurred. The standard grades (I - VII) were turned experimentally into "craft-oriented" schools in some regions, and gradually into "proper basic schools" as qualified teachers became available.

As of 1964, about 13 per cent of Maharashta State's primary schools (5,000 out of 39,000) conducted basic education programmes. These offered one of the following occupational-type programmes: agriculture (including kitchen gardening); spinning; spinning plus weaving; cardboard work; cardboard work plus woodwork (carpentry). A majority offer either agriculture, or spinning-weaving. (A. Kamat, 1968)

Among 19 basic schools studied in Maharashta State, there were 9 with agriculture, 7 with spinning-weaving, and 3 with woodwork. Such schools were founded as follows: 2 in 1926-27, 5 in 1947-49, 8 during 1950-59, and 4 during the period since 1960.

The agricultural schools depend on the village, and sometimes on an important landowner, for a plot of land to conduct their work; but this co-operation is not always sustained or adequate. A major problem in establishing basic education schools thus becomes one of linkage between social organization and the educational institution.

Indian theory expands and combines fundamental and adult learning by the term social education, which embraces,or rather aims at creating a mental crucible for, all the behavioural changes that must occur in the human organism if socio-cultural development of society is to proceed along rational paths. For example, Singh (1964) includes knowledge required for participation in: social organization; family; health and hygiene; schooling; work; recreation.

Social learnings that build competencies for managing behavioural change in these areas of human life in one culture or another have to be derived from the knowledge, concepts, and resources available, viz.: psychology of adolescents and adults, methods of teaching adolescents and adults, principles of the organization of work, human relations and the social dynamics of organizational participation, and conflict-resolution skills.

Effective social education consists in acquiring what these areas of human culture have to offer man in his efforts to expand his technical mastery over the environment. He implies in certain of his discussions that a given society, such as India, may not be able to breach all these domains of human development at once, but may have to set priority, on a national scale, on elementary communications skills. Focus on such limited objectives excludes any real possibilities for an integrated approach to developing human resources for rural change. The largely unsuccessful attempts by functional literacy projects to overcome this limitation appear to underscore the difficulties encountered.(15)

A somewhat more pragmatic Indian approach, largely based on experience as an adult educator, is advocated by J.C. Mathur (1972). While he embraces most of the concepts and learning objectives just reviewed, he stresses the place that material incentives, production-level or production-focus, and local farmer organization have in determining the content and instructional methods in rural education.

In North America the famous 4-H youth club movement, stemming from out-of-school activities in farm-related experiments, began during the early 1900's and had untold influences on bringing scientific knowledge within reach of farmers. (F.M. Reck, 1951) Together with government-sponsored extension and county-agent systems, linked to centres of

agricultural research, this youth programme provided a direct linkage between farm methods and innovative technology. The institutional conditions in North America make comparison with many other environments very unrealistic, however. The same might be said for rural assistance programmes in the United Kingdom and the Netherlands, for example.

As a guide to current curricular and instructional experimentation in rural education currently being implemented in Africa and Asia, documentation on model curricula is available and assures the representativeness of many innovative programmes, which are administered by ministries or agencies of rural education. Careful study of and feedback on these experiments are essential to improving our capacity to build effective learning systems.

V. SUMMARY REMARKS

This paper explores a significant segment of research and field experiences in rural education: communication of relevant knowledge to disadvantaged rural populations. In so doing, three highly inter-related areas of enquiry, which tend to govern the building up of concepts and methods for improving delivery of new knowledge and skills to those populations, have received special attention:

(1) situational-structural variables
(2) client systems and behavioural change
(3) organization of curriculum and instruction

At the present state of knowledge in these areas, it would be unwise to advance with any note of predictability or finality a particular theory or set of alternative strategies for governing the planning process in rural educational development. However, a few more or less salient guidelines and questions for further study in this regard, are offered for consideration.

First, educational and training activities develop closely in relation to, and interact with, a human community's ecological and social-structural environments. Knowledge systems ideally serve the needs and problems encountered in these environments, to which planning must be sensitive, and for which planning should incorporate methods appropriate to analyse those factors. Is it possible to predict the degree of and demand for knowledge applicability without such assessment?

Educational programmes (formal or non-formal learning systems) are typically responsive to and dependent on the patterns and influences of social organizations -- their goals, leadership styles, and communications networks. Decisions on knowledge dissemination are usually strongly influenced by groups which carry social and/or political weight. At the same time, clients' perceptions of how knowledge relates or applies to them are also influenced by their immediate social environment and social preferences. Planners need to have adequate knowledge of these organizational characteristics if the planned diffusion of new culture for behavioural change is to proceed fairly unobstructed. It is likely that renewed emphasis on applying the sociology of knowledge could contribute to improved planning for rural education.

A third point is that, clients tend to learn most effectively when they are in a position to engage in some decision-situation activity related to their socio-cultural needs, and/or to develop problem-solving behaviours adequate to overcoming present constraints and conflicts inhibiting their development. In view of persistent failures by most conventional learning systems to attain rural objectives, is there any alternative to pursuing a decidedly more client-focussed approach? It is likely that the rates of knowledge diffusion and application can be multiplied many-fold by a change of role and method with respect to client participation. It is also possible that the experiences of more highly structured social change programmes, such as have been implemented in socialist countries, can be instructive for other polities as well.

Curricular and instructional development should include methods for collecting data on clients' actual and potential utilization of knowledge, on their social-psychology, and on instructional theories appropriate to the rural setting. These must complement and qualify already accumulated knowledge within the "disciplines" and subject-matters conventionally used as curricular sources.

Finally, while the concept of integrated educational development appears to be a desirable policy goal, at the present juncture in most countries, it is probably not feasible. Current capacity of knowledge delivery systems to meet the most urgent needs for increased agricultural productivity is barely adequate to the task. Integrated approaches should probably be tried on an ad hoc basis wherever conditions warrant it. A few

successful training programmes in agriculture have created demands in other sectors, such as credit, birth control, housing, etc., which in turn generate related educational development demands. This process promotes a kind of natural integrated trend which then can receive assistance from the various planning services. To try to create integration when conditions do not support it would be a dispersion of already scarce resources.

We probably now possess an elementary technology of social change to apply effectively to some rural development problems. It remains for those charged with investment decisions to make choices that will enable that know-how to be applied successfully.

Our knowledge about rural educational planning does not yet prermit us to reply in definitive manners to our original question: "What educational strategies could be devised?" But we can say that the choice of strategy must be one that is based on diagnosis of the interactions between client systems (as both producers and consumers of energy), on the one hand, and their environmental structures and social organizations, on the other. A strategy must link its knowledge-delivery systems with the communications networks that sustain and can change the human functions performed within these various systems. Several of the projects reviewed in this brief survey demonstrate the feasibility of building such strategy.

VI. FOOTNOTES

(1) The World Bank apparently subscribes to this principle by its recent statement, "The Dynamics of Rural Poverty", in Rural Development, February 1975. See also L. Malassis, 1966, p.10.

(2) But is manpower and employment development the most urgent, or even the most feasible, approach in rural areas with increasing population pressures? D. Seers points out that in countries having quite different resource factors (Colombia, Sri Lanka), there are common problems such as high-cost technology inputs and land-use patterns, the latter being, "a major obstacle to employment creation. It is difficult to imagine how rural areas in either country could absorb a significant fraction of their own population increase without some redistribution of land. Small holdings are more intensively cultivated than large ones, generating both more output and more labour use per acre." (Dudley Seers, "Reducing structural unemployment in Ceylon", Development Digest, vol. XI, No. 1, Jan. 1973, p. 75). Perhaps the rural-to-urban, agrarian-to-industrial transformations occurring in some of the socialist countries of Eastern Europe provide other kinds of alternatives, which would have to receive separate treatment.

(3) Cf. P. Coombs, 1974; and the many surveys on alternative educational arrangements carried out by U.S. AID, U.K. ODM, France's Coopération Technique, German Institute of Development, etc. etc.

(4) The author subscribes to the view that information dissemination for the purpose of educating covers all activities of consciously and deliberately imparting, communicating, and acquiring knowledge considered of value by people; thus, the imparting and assimilating of moral attitudes, artistic-technical skills, linguistic expressions, mathematical computations, social values, civic skills, etc. pertain to the theory and practice of communication in the medium of a social situation. Perhaps only the realm of knowledge historically ascribed to revelation escapes these classifiers, but even then such knowledge becomes meaningful only in a social context. This concept of education is consistent with Unesco definitions which include, for example, the following statements: "a planned, organized communication designed to bring about learning" (COM-74/CONF.203/INF.4); and "organized and sustained instruction designed to communicate a combination of knowledge, skills and understanding valuable for all activities of life". (COM-74/CONF.203/3).

(5) The element of structure in communications process was identified at least as early as Quintilian (35 - 100 A.D.), who advised his professors to take account of the cultural values and forms of behaviour that students brought with them, acquired outside the formal school room. He pointed toward a science of education which, two thousand years later, is coming to life.

(6) The complexity of research tasks facing development planners who seek to be well informed was put politely but sharply to an international symposium on change in agriculture, by Dr. Mosher, President of the Agricultural Development Council in 1970: "Real life is not organized into sets of problems, some of which are distinctly and exclusively sociological, others ... technological, others economic or political... (but) two, three, four or more academic disciplines or professional

fields of activity" are necessary to build rural development programmes. (A.H. Bunting, 1970). Such complexity can only be modestly reflected in a short background paper as this.

(7) See, for example, the analysis of a rural school in Burundi, whose effects on farming were modest to say the least: FAO/PNUD, Burundi, Institut technique agricole, Rome : 1974. The report cautions that technical knowledge and external assistance "should be direct, proportional to their capacity to profit from it and include ... means for improving production, soil conservations, and harvesting." First-hand reporting, and personal observations, by the writer, on agricultural education in the Lebanon indicate failure of the formal educational approach to have much influence on rural communities. Agricultural schools in South Korea have had similar experience. Even were conventional schools highly effective, they reach but a small portion of rural people.

(8) Agronomist Andrew Pearse steps a bit harder on the issue by pointing to the preferences in the world "Green Revolution" programme, by political leaders, for applying new techniques in the most favoured regions, among some of the more favoured farmers. While increased yields and productivity indeed resulted, other problems were created in terms of loss of work by many family members, who were replaced by immigrant labourers; and in terms of creating persistent incongruities between educational services available, and rural learning needs. (Cf. A. Pearse, 1974; also, K. Griffin, 1972.)

(9) See J.V. Baldridge, "Organizational change: The human relations perspective versus the political systems perspective", Educational Researcher, Feb. 1972, pp. 4-10; R. Dreeben; J.M. Seymour. An excellent review of the place of organization in programmes of cultural change, with special application to education is, M.B. Miles, "Planned change and organizational health : figure and ground", Paper for Seminar on Change Processes in Public Schools, University of Oregon, Oct. 1964. A similar viewpoint is taken by J. Grunig and N. Röling; the latter (1973, 1975) pleads for approaches that can lead to manipulating the structures, or systems, which influence behaviours, based on "decision-oriented research", and research on inter-system linkages (cf. work by R. Havelock on the latter). In a more general way, this approach to cultural behaviour change finds support in such works as D. Katz and R. Kahn, The Social Psychology of Organizations, New York: John Wiley & Sons, 1966, esp. Chs. 6, 9, and 12.

(10) Relevant research on this matter of communication competence focusses on "members of communities, as incumbents of socialroles, and seeks to explain their uses of language to achieve self-identification and to conduct their activities", pointing to advantages in use of native role occupants for carrying change-oriented knowledge, especially in rural areas. J. Gumperz and D. Hymes, Directions in Sociolinguistics: the ethnography of communication, New York : Holt-Rinehart-Winston, 1972 ; see E.M. Albert, "Ethnographic description and explanation, Culture patterning of speech behaviour in Burundi".

(11) The so-called "diffuser incentive" activates latent desires or susceptibilities among clients to innovate and encourages them to engage in social communication about change. (E.M. Rogers, 1973, p. 167).

(12) Except by implications in the discussion on ecological factors, we have not dealt here with economic structures and questions of marginal costs -- "when" it will pay a subsistence level farmer to invest time in acquiring more know-how and credit to apply it. The educational planner probably has to take the best available estimates on economic returns as a given, and concentrate on social analysis and educational strategies. (Cf. Colin Clark, Margaret Haswell, The economics of subsistence agriculture, Macmillan : 1964).

(13) Research findings on the roles of local and regional media need further exploration to clarify problems of both information input (especially client demands or needs) and information utilization. The functionality of most technically sophisticated media services programming to the disadvantaged rural areas can be seriously questioned. Whether predominantly Indian as in Latin America or linguistically diverse and dependent as in much of Africa or India, these areas would require huge investments to equip their inhabitants with an effective second language. The acceptability of dependency on a foreign medium, however, is at present doubtful, if feasible. Furthermore, in largely oral cultures any technology of diffusion needs to articulate closely with indigenous life styles and feelings. A main alternative to present media practices and policies could be found in developing indigenous press systems, local newspapers communicating interest-laden information.

(14) In his perceptive reduction of data on independent variables, relating to differences in agricultural change among Colombian peasants, to five factors, Rogers found empathy and leadership in the social setting ranking highest (cf. 1969, pp. 304-305). Derived essentially from methods recording quantitative units for purposes of correlation, these data hint at, but do not explain, possible relationships between empathy, or positive-supportive social attitudes, and opinion leadership, on the one hand, and characteristics of the social organization in which these "independent variables" occur, on the other. Our findings about the significance of social organization and of linkages between organizational systems point to interest in how those variables (empathy, leadership) inter-relate with organizational characteristics.

(15) Notwithstanding conceptual and practical difficulties, the Indian Ministry of Education is forging ahead with a current plan to attain universal functional primary education for children and adults. The plan includes measures of part-time schooling for some, of expanded age-groups for others, of remedial programmes for those plagued with repeating, etc. For some 50 million illiterate adults, special literacy classes, youth clubs, and other learning-related organizations. In-service training is planned for a variety of potential instructors. For about 100 such programmes in a district, a cost of 120,850 R. is estimated. (See, India, Ministry of Education and Social Welfare, Main Schemes of Non-formal Education in the Fifth Five-Year Plan, New Delhi: 1974.)

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